

Upper Eastern Shore Basin Summary

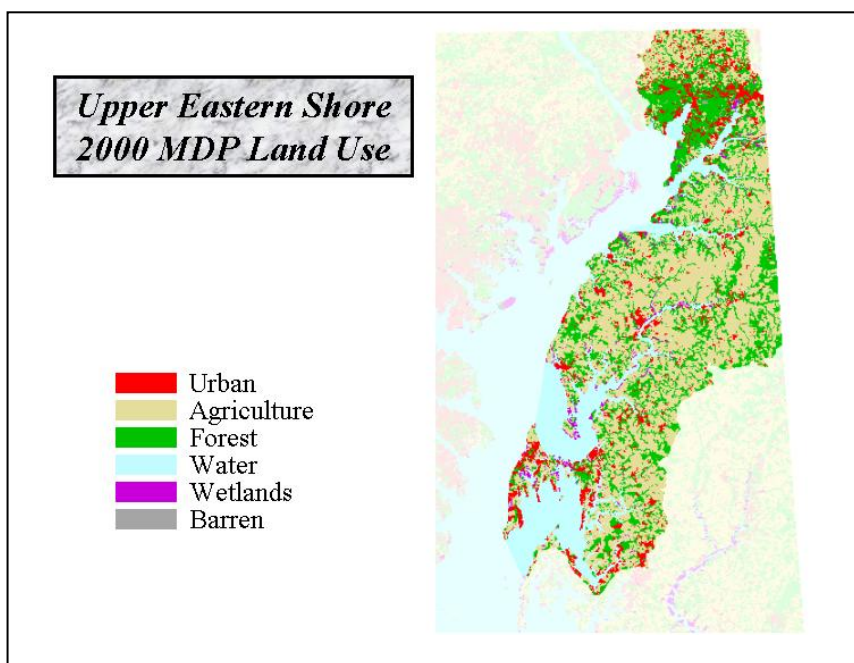
Executive Summary
1985-2003 data, February 2005

The Upper Eastern Shore Basin is largely agricultural (58 percent) and forested (32 percent). Most of the nitrogen (74 percent), phosphorus (73 percent), and sediment (89 percent) come from agricultural lands. However, point sources are becoming a more important source of nitrogen (9 percent) now than in the past. Modest decreases in nitrogen and phosphorus loadings have not translated into water quality improvements in many areas. Notably, high nitrogen and algae levels in the Chester River are tied to poor benthic community health and inadequate bay grass acres.

LOADINGS (based on watershed model)

Modeled nitrogen, phosphorus, and sediment loadings have decreased somewhat. Agriculture is the dominant source.

- Total nitrogen loadings have decreased 19 percent from 1985 to 2002 (down from 8.1 to 6.6 million pounds).
- Total phosphorus loadings have decreased 23 percent from 1985 to 2002 (down from 0.7 to 0.5 million pounds).
- Sediment loadings have declined about 19 percent from 1985 to 2002 (down from 132,000 tons to 107,000 tons).



LONG-TERM TIDAL WATER QUALITY (based on monitoring concentration data)

Loadings decreases have been insufficient to improve water quality in most areas. A notable exception is the Upper Chester station, which shows improvements in phosphorus, sediment and algae levels, and in water clarity. Although heading in the right direction, unfortunately these improvements have not been sufficient, and the basin continues to have poor water quality.

- Total nitrogen and phosphorus levels have significantly improved from 1985 to 2003 at only a couple of stations—the Bohemia River for both nutrients, and the Upper Chester River for phosphorus. Levels remain relatively poor in the Chester River.

- Sediment levels have improved at the Bohemia and Upper Chester stations, but worsened at the Lower Chester and Eastern Bay stations.
- Algae levels are poor in many areas, and have worsened in the Lower Chester River and Eastern Bay, where water clarity has also worsened in response to these algae increases.
- Dissolved oxygen levels are poor (< 2 mg/L) at Lower Chester and Eastern Bay stations, but good (> 5 mg/L) elsewhere.
- See continuous monitoring and water quality mapping data for the Chester River and in Eastern Bay at www.eyesonthebay.net.

BIOLOGICAL and ECOSYSTEM MONITORING

Bay grasses did not improve in the Chester River, where nitrogen and algae levels remain high. Acreages did increase through 2001 (a dry year) in other areas, but have declined since.

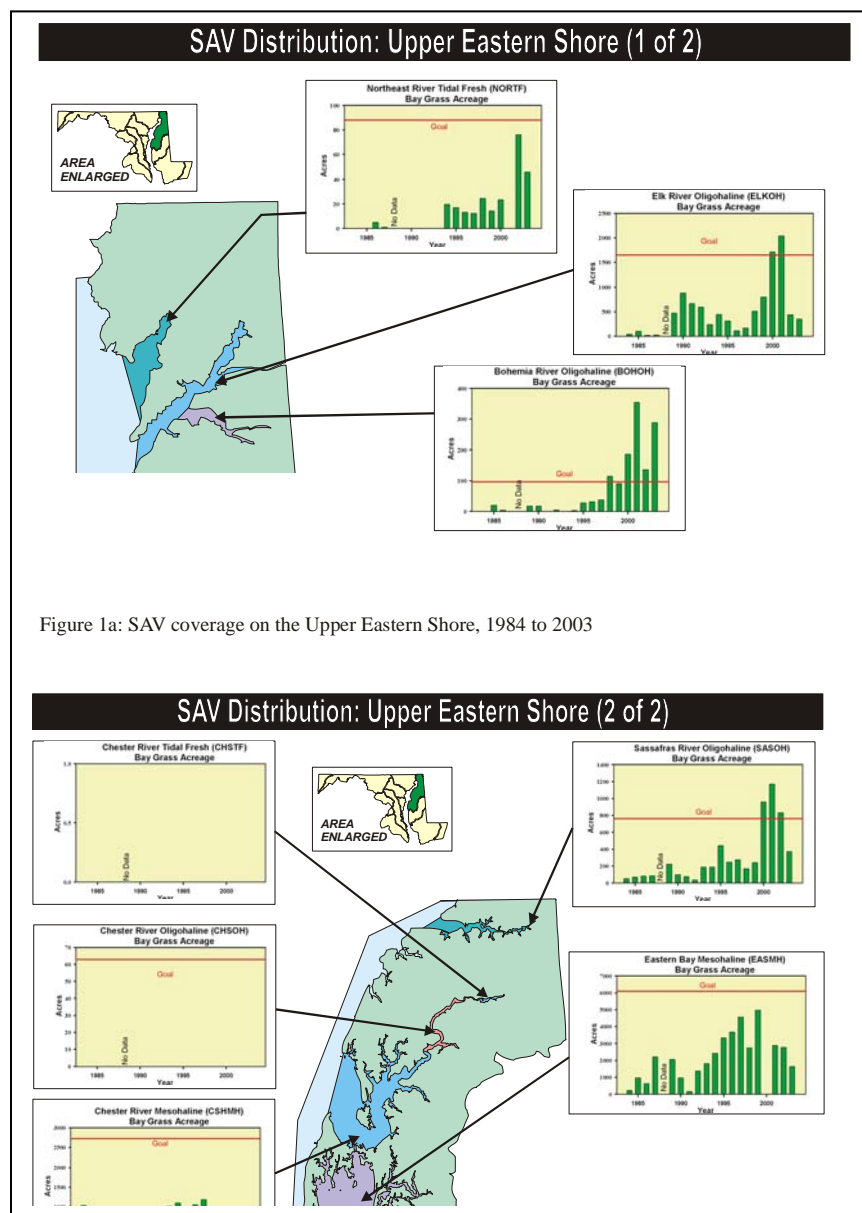


Figure 1a: SAV coverage on the Upper Eastern Shore, 1984 to 2003

- Bay grasses in some areas showed improvements peaking in 2001 (a dry year), but declined afterwards. Other areas, such as the Chester River, showed no improvements in the last 10 years. This is not surprising, because it continues to have high nitrogen concentrations and algae levels.
- Benthic community condition is degraded in many areas. Areas around Eastern Neck Island (mesohaline Chester) have degraded benthic communities, due to over-enrichment.
- Many Upper Eastern Shore stations are nutrient-saturated (light- or temperature-limited) throughout the year. The Lower Chester and Eastern Bay are largely phosphorus limited in the spring and nitrogen-limited in the summer and fall.

For more detailed information see the complete basin summary at: http://www.dnr.state.md.us/bay/tribstrat/basin_summaries.html.